

EAST - [10767089.wsp:1]

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- L1: (1122) 455/130 455/131 455/141 455/150.1 455/140 455/269 455/29
- L2: (433) 1 and ("direct conversion receiver" or "direct conversion transceiver")
- L3: (47) 2 and shield\$3
- L4: (26) 3 and substrate
- S1: (1) ("6175728").PN.
- S2: (1382) "direct conversion receiver" or "direct conversion transceiver"
- S3: (124) S2 and shield\$3
- S4: (75) S3 and substrate
- S5: (69) S4 and mixer
- S6: (62) S5 and (LO or "local oscillator")
- S7: (3) S6 and (shield\$3 near5 surface)
- S8: (2) ("6175728") or ("6360087").PN.
- S9: (1) S6 and (mixer near8 block\$3 near8 "local oscillator")
- S10: (1) (US-20040185811-\$).did.
- S11: (154486) 455/130 455/131 455/141 "455" "150.1" 455/140 455/269
- S12: (600) S11 and ("direct conversion receiver" or "direct conversion transceiver")
- S13: (61) S12 and shield\$3
- S14: (60) S13 and mixer
- S15: (57) S14 and (LO or "local oscillator")
- S16: (21) S15 and substrate

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 DBs: US-PGPUB USPAT EPO Plurals
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455/130 455/131 455/141 455/150.1 455/140 455/269 455/296 455/293 455/323 455/326 455/334 455/341 455/117 455/300 455/317 455/63.1 329/306 329/318 329/320 329/323 329/302 330/307 330/298 330/274 331/18 331/63 455/333

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 - L5: (3) 4 and (shield\$3 near5 surface)**
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 - S12: (600) S11 and ("direct conversion receiver" or "direct conversion transceiver")

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DBs: US-PGPUB: USPAT: EPO PureSearch
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4 and (shield\$3 near5 surface)

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U	I	Document ID	Issue Date	Pages	Title	Current OR	Current Ret	Inventor	S
1	<input type="checkbox"/>	<input checked="" type="checkbox"/> US 20040185811 A1	20040923	14	Single chip direct conversion transceiver for reducing DC offset	455/131	455/293	Woo, Sang-Hyun et al.	<input type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/> US 20030032401 A1	20030213	11	Direct conversion transceiver capable of reducing DC offset	455/217	455/117; 455/300;	Woo, Sang-hyun et al.	<input type="checkbox"/>
3	<input type="checkbox"/>	<input checked="" type="checkbox"/> US 6944436 B2	20050913	11	Direct conversion transceiver capable of reducing DC offset	455/317	455/114.1; 455/114.2;	Woo; Sang-hyun et al.	<input type="checkbox"/>

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- L1: (11222) 455/130 455/131 455/141 455/150.1 455/140 455/269 455/29
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- L3: (47) 2 and shield\$3
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- L5: (3) 4 and (shield\$3 near5 surface)
- L6: (3) 4 and shield\$3.clm.
- L7: (1) 6 and "dielectric layer".clm.
- L8: (1) 7 and "positive hole".clm.

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- S1: (1) ("6175728").PN.
- S2: (1382) "direct conversion receiver" or "direct conversion transceiver"
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- S12: (600) S11 and ("direct conversion receiver" or "direct conversion transceiver")

United States Patent Application Publication

Woo et al. Sep. 23, 2004

(14) SINGLE CHIP DIRECT CONVERSION TRANSCEIVER FOR REDUCING DC OFFSET AND LOCAL OSCILLATOR FEEDBACK MANUFACTURING THE SAME

(13) Int. Cl. 7: **H04B 1/00**

(12) U.S. Cl. **455/131; 455/269**

(72) Inventor: Sang-Hyun Woo, Seoul (KR); Jung-Ye Park, Yongin (KR)

(73) Assignee: KAMSUNG ELECTRONICS CO., LTD., GYEONGGI DO (KR)

(21) Appl. No.: 10773491

(22) Fldg.: Jan. 25, 2001

(39) Foreign Application Priority Data
Jan. 24, 2000 (KR) 10-2000-0000000

ABSTRACT

A single chip direct conversion transceiver that includes a receiver on which a mixer and a local oscillator are provided in a chip, and a receiver has frequency conversion function between the local oscillator and the mixer with a modulator and a demodulator. A dielectric layer is formed under the receiver on which the signal is input from the mixer and signal leakage occurring when the antenna and the local oscillator are connected to the receiver is reduced. A first inductor is formed above the dielectric layer and connects the mixer and the local oscillator. A second inductor is formed above the antenna and the mixed signal surface set on the dielectric layer is covered by cover the first inductor.

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U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ret	Inventor	S
1	<input type="checkbox"/>	<input checked="" type="checkbox"/> US 20040185811 A1	20040923	14	Single chip direct conversion transceiver for reducing DC o	455/131	455/293		Woo, Sang-Hyun et al.	<input checked="" type="checkbox"/>

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 L4: (75) 3 and substrate
 L5: (69) 4 and mixer
 L6: (62) 5 and (LO or "local oscillator")
 L7: (3) 6 and (shield\$3 near5 surface)
 L8: (2) ("6175728" or ("6360087")).PN.
 L9: (1) 6 and (mixer near8 block\$3 near8 "local oscillator")
 L10: (1) (US-20040185811-\$).did.
 L11: (154486) 455/130 455/131 455/141 "455" "150.1" 455/140 455/20
 L12: (600) 11 and ("direct conversion receiver" or "direct conversion")
 L13: (61) 12 and shield\$3
 L14: (60) 13 and mixer
 L15: (57) 14 and (LO or "local oscillator")
 L16: (31) 15 and substrate
 L17: (3) 16 and (shield\$3 near5 surface)
 L18: (10928) 455/130 455/131 455/141 455/150.1 455/140 455/269 45
 L19: (1047) 455/130 455/131 455/141 455/150.1 455/140 455/269 455
 L20: (31) 19 and ("direct conversion receiver" or "direct conversion")
 L21: (2) 20 and shield\$3.clm.
 L22: (2) 21 and (shield\$3 near5 surface).clm.
 L23: (1) 22 and "dielectric layer".clm.

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U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ret	Inventor
1	<input type="checkbox"/>	US 20040185811 A1	20040923	14	Single chip direct conversion transceiver for reducing DC o	455/131	455/293		Woo, Sang-Hyun et al.

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US 20040185811 A1

(16) United States
(17) Patent Application Publication
Woo et al.
(18) Pub. No.: US 20040185811 A1
(19) Pub. Date: Sep. 23, 2004

(21) Int. Cl. 7
(22) E.G. C17
(23) 455/293; 455/269

(24) SINGLE CHIP DIRECT CONVERSION TRANSCIEVER FOR REDUCING DC OFFSET AND METHODS OF MANUFACTURING THE SAME
(25) Inventor: Sang-Hyun Woo, Seoul (K.R.); Jung-Ae Park, Yongin (K.R.)
Correspondence Address:
Paul J. Peretti, Esq.
DELMARSH & BARRETT, LLP
120 Wall Street, Suite 1000
Uptown, NY 10005-4210

(26) Assignee: SAMSUNG ELECTRONICS CO., LTD., GYONGGI-DO (K.R.)

(27) Appl. No.: 10/707,285
(28) Filing Date: Jun. 24, 2003
(29) Priority Data:
Jan. 24, 2002 (K.R.) 10-2002-0004263

(30) ABSTRACT
A single chip direct conversion transceiver that reduces a direct conversion offset is provided. The transceiver includes an antenna, a switch, a mixer, a local oscillator, a low-pass filter, and an output amplifier. The switch connects the antenna to the mixer and the local oscillator and is coupled with a switchable voltage source. The mixer is coupled with the local oscillator and the low-pass filter. The local oscillator generates a local oscillation signal having a frequency higher than the received signal or lower than the carrier frequency of the received signal. The mixer converts the received signal into an intermediate frequency signal. The low-pass filter removes the intermediate frequency signal and the local oscillator. A first attenuator is disposed above the local oscillator to reduce the noise level of the local oscillator. A second attenuator is disposed below the local oscillator to reduce the noise level of the local oscillator. Differential layout for ground connection is provided between the local oscillator and the shield ground terminal and on the shield ground terminal to cover the local noise connection.

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72 A1 74 78 78
A2 80 82

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L3: (124) 2 and shield\$3
 L4: (75) 3 and substrate
 L5: (69) 4 and mixer
 L6: (62) 5 and (LO or "local oscillator")
 L7: (3) 6 and (shield\$3 near5 surface)
 L8: (2) ("6175728" or ("6360087")).PN.
 L9: (1) 6 and (mixer near8 block\$3 near8 "local oscillator")
 L10: (1) (US-20040185811-\$).did.
 L11: (154486) 455/130 455/131 455/141 "455" "150.1" 455/140 455/269
 L12: (600) 11 and ("direct conversion receiver" or "direct conversion tra
 L13: (61) 12 and shield\$3
 L14: (60) 13 and mixer
 L15: (57) 14 and (LO or "local oscillator")
 L16: (31) 15 and substrate
 L17: (3) 16 and (shield\$3 near5 surface)
 L18: (10928) 455/130 455/131 455/141 455/150.1 455/140 455/269 455/2
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 L20: (31) 19 and ("direct conversion receiver" or "direct conversion tra
 L21: (2) 20 and shield\$3.clm.
 L22: (2) 21 and (shield\$3 near5 surface).clm.
 L23: (1) 22 and "dielectric layer".clm.
 L25: (1) 22 and "positive hole".clm.

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United States Patent Application Publication (Pub. No. US 2004/0185811 A1)
 (Pub. Date: Sep. 23, 2004)

(54) SINGLE CHIP DIRECT CONVERSION TRANSCIEVER FOR REDUCING DC OFFSET AND METHOD OF MANUFACTURING THE SAME

(61) Int. Cl.: H04L 1/00
 (52) U.S. Cl.: 455/117; 455/300

(71) Inventor: Sang-Hyun Woo, Seoul (KR); Jung-Woo Park, Yongin (KR)

(72) Assignee: SAMSUNG ELECTRONICS CO., LTD., HYUNDAI-DONG, KOK, 43, Kyeonggi-Do, Gyeonggi-do, Korea (KR)

(62) Appl. No.: 10/453,688
 (63) Filing Date: Jan. 23, 2004

(64) Foreign Application Priority Data
 Jan. 24, 2003 (KR) 10-2003-0000000

(73) ABSTRACT

A single chip direct conversion transceiver that includes a substrate on which a mixer unit and a local oscillator are provided. The mixer unit has a positive hole and a negative hole formed on the substrate such that the local oscillator signal is input to the positive hole and the reference signal is input to the negative hole. The local oscillator signal is input into the mixer unit through the positive hole and generates the reference unit and the local oscillator. Different layers are formed between the substrate and the shield ground section and on the shield ground section to cover the first transmission line.

	U	1	Document ID	Issue Date	Pages	Title	Current OR	Current	Ret	Inventor	S
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20040185811 A1	20040923	14	Single chip direct conversion transceiver for reducing DC offset	455/131	455/293		Woo, Sang-Hyun et al.	<input type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20030032401 A1	20030213	11	Direct conversion transceiver capable of reducing DC offset	455/217	455/117; 455/300;		Woo, Sang-hyun et al.	<input type="checkbox"/>

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- L6: (62) 5 and (LO or "local oscillator")
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- L14: (60) 13 and mixer
- L15: (57) 14 and (LO or "local oscillator")
- L16: (31) 15 and substrate
- L17: (3) 16 and (shield\$3 near5 surface)

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(a) United States
 (b) Patent Application Publication
 Woo et al.
 (d) Pub. No.: US 2004/0185811 A1
 (e) Pub. Date: Sep. 23, 2004

(f) SINGLE CHIP DIRECT CONVERSION
 TRANSCEIVER FOR REDUCING DC
 OFFSET AND METHOD OF
 MANUFACTURING THE SAME

(g) Inventor: Sang-Hyun Woo, In-sik Kim, Dong-jae Kim
 Correspondence Address:
 Paul J. Perrot, Esq.
 DELWORLTH & BARRETT, LLP.
 122 EAST 42nd Street
 New York, NY 10017 (US)

(h) Assignee: SAMSUNG ELECTRONICS CO., LTD., GYEONGGI DO (KR)

(i) Appl. No.: 10/974,689
 (j) Fldg. Date: Jun. 19, 2004
 (k) Foreign Application Priority Data
 Jun. 24, 2003 (KR) P02363

ABSTRACT

A single-chip direct conversion transceiver that includes a substrate on which a varactor diode and two metal-insulator-semiconductor (MIS) capacitors are formed between the top and bottom electrodes of the varactor diode and each with a conductive layer on its top and bottom electrodes. The MIS capacitors are connected in series with the varactor diode. The MIS capacitors are formed on the substrate and blocks signal to large capacitive noise from the varactor diode. The MIS capacitors are connected through the conductive layers on the top and bottom electrodes of the MIS capacitors to the conductive layer on the substrate. The conductive layer on the substrate connects the MIS capacitors and the varactor diode. The conductive layer on the substrate also connects the conductive layer on the MIS capacitors and the conductive layer on the varactor diode. The conductive layer on the MIS capacitors and the conductive layer on the varactor diode are formed between the conductive layers on the top and bottom electrodes of the MIS capacitors and the conductive layer on the substrate. The conductive layer on the MIS capacitors and the conductive layer on the varactor diode are formed between the conductive layers on the top and bottom electrodes of the MIS capacitors and the conductive layer on the substrate.

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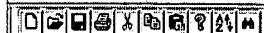
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United States
 (1) Patent Application Publication (or Pub. No.: US 2004/0185811 A1
 Sep. 23, 2004)

(54) SINGLE CHIP DIRECT CONVERSION
 TRANSCIEVER FOR REDUCING DC
 OFFSET AND METHOD OF
 MANUFACTURING THE SAME

(73) Inventor: Sang-Hyun Woo, Seoul (KR); Samsung
 Park, Yong-ki (KR)

(21) Int. Cl.: H04L 27/00
 (31) U.S. Cl.: 455/134, 455/293

(Correspondence Address:
 Paul J. Farrell, Esq.
 DENTON & FERRELL, LLP
 220 East Ontario Street
 Chicago, IL 60611 (US))

(72) Assignee: SAMSUNG ELECTRONICS CO.,
 LTD., GYEONGGI-DO (KR)

(22) Appl. No.: 10/757,028

(23) Filed: Jan. 24, 2004

(33) Foreign Application Priority Data

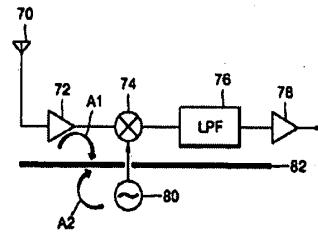
Jan. 24, 2003 (KR) 10-2003

Publication Classification

(1) Int. Cl.: H04L 27/00
 (2) U.S. Cl.: 455/134, 455/293

(77) ABSTRACT

A single chip direct conversion transceiver that includes a substrate on which a mixer unit and a local oscillator are positioned. The mixer unit is coupled to a local oscillator to receive the oscillator signal and the local oscillator is coupled to a local oscillator block. The local oscillator block is further coupled to a local oscillator. Dielectric layers are formed between the substrate and the shield ground surface to cover the dielectric insulation.



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